

CLAIMS

1. An electrically conductive invert emulsion wellbore fluid comprising:-
 - i) from about 0.2% to about 10% by volume of carbon black particles, and
 - ii) one or more emulsifying surfactant(s) selected from the class including: nonionic emulsifiers of Hydrophilic-Lipophilic Balance (HLB) less than about 12, and anionic surfactants wherein the counter-ion (cation) is any of alkali metal, ammonium, or hydrogen ions.
2. A wellbore fluid according to Claim 1 wherein the carbon black exhibits a specific surface area of at least 500 m²/g, and preferably of at least 1500 m²/g.
3. A wellbore fluid according to any preceding Claim wherein the nonionic emulsifier(s) is (are) selected from the class including: diethanolamides based on fatty acids of more than 12 carbon atoms, alkoxylated fatty alcohols, alkoxylated alkylphenols, and ethylene oxide propylene oxide block polymers.
4. A wellbore fluid according to any preceding Claim wherein the anionic surfactant(s) is (are) selected from the class including: alkane sulphonates, alpha olefin sulphonates, alkyl arene sulphonates, polyolefin sulphonates and acyl taurates, all characterised by the carbon number of the hydrophobic moiety being at least about 12, and by the counter-ion (cation) being any of alkali metal, ammonium, or hydrogen ions.
5. A wellbore fluid according to any one of Claims 1 to 4 wherein the anionic surfactant(s) is (are) selected from the class including: fatty acids of 12 or more carbon atoms, phosphate esters of ethoxylated alcohols of 12 or more carbon atoms, phosphate esters of ethoxylated alkyl phenols of 14 or more carbon atoms, and alkyl aminomethylene phosphonates wherein the alkylamine precursor contains 12 or more carbon atoms, all characterised by the counter-ion (cation) being any of alkali metal ion, ammonium, or hydrogen ions.
6. A wellbore fluid according to any preceding Claim in which the total dose of emulsifier(s) is in the range 0.5% to 10% by weight.
7. A wellbore fluid according to any preceding Claim containing any material capable of precipitating or complexing polyvalent metal cations such as the ions of calcium, magnesium and iron.

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8. A wellbore fluid according to Claim 8 wherein the emulsified brine phase contains dissolved anions such as phosphate, carbonate, silicate which will form insoluble precipitates with any ions of calcium, magnesium or iron cations.
9. A wellbore fluid according to Claim 8 wherein the complexing agent is selected from the class including the alkali metal or ammonium salts, or the free acids, of citric acid, gluconic acid, glucoheptanoic acid, ascorbic acid, erythorbic acid, nitrolotriacetic acid, ethylene diamine tetraacetic acid, diethylenetriamine pentaacetic acid, hydroxyethylidene diphosphonic acid, nitrolotrismethylenephosphonic acid, aminomethylene phosphonates based on ethylene diamine or diethylene triamine or higher ethyleneamines, and polyphosphates such as tetrasodium pyrophosphate.
10. A method of drilling or completing a well wherein the wellbore fluid used is as in any preceding Claim.
11. A method of providing enhanced information from electrical logging tools, measurement-while-drilling (MWD), logging-while-drilling (LWD), geosteering and the like wherein the efficiency is enhanced by the improved electrical conductivity of any of the wellbore fluids as in Claims 1 to 9.